STATE OF DELAWARE
SINGLE POINT OF CONTACT – SPOC
INTERGOVERNMENTAL REVIEW OF FEDERAL PROGRAMS
Office of Management and Budget
Haslet Building, 3rd Floor, Dover, Delaware 19901
(302) 739-4206

RECEIVED
OCT 08 2009
By

1. STATE APPLICATION IDENTIFIER:	SPOC use ONLY	Month	Reviewer	CC's
59-10-05-04		12	JS	R

2. Applicant Project Title: Ethnic & Racial Prenatal Care Utilization (ARRA)

3. Applicant Department:	4. Applicant Division/APU:
Higher Education	Delaware State University

5. Applicant Address: Delaware State University Code D160

6. Contact Person:	7. Contact Person's Phone Number:
Agnes Richardson, Ph.D.	(302) 857-6749

8. Signature of Secretary or Agency Head (for state agencies) or Chief Administrator (for all other applicants)

9. Federal Grantor Department:	10. Federal Sub-Agency:
National Institutes of Health	

11. Federal Contact Person:	12. Phone Number:
Dr. Paul A. Cotton	301-594-4882

13. Address: National Institutes of Health, 9000 Rockville Pike, Bethesda, Maryland 20892

14.	15. FEDERAL CATALOG NO: (CFDA)
Recovery Act Limited Competition: Academic Research Enhancement Award (R15)	93 . 701 N

16. Project Description:

This study will involve a statewide assessment of prenatal care utilization to examine the impact of 1) the need for prenatal care utilization; 2) predisposing factors – i.e., factors known to impact health care utilization; and 3) enabling factors – i.e. health insurance status, distance travel to receive prenatal care, and indexes that measure the geographic availability of clinics that provide prenatal service.

17. Will funds be utilized for any technology initiatives? ☐ Yes **X** No If so, Business Case Number and brief project summary:

N/A

18. Measurable Objectives:
a. What were last year's objectives?

N/A

b. Were these objectives met? (If not, please explain why)

N/A

c. What are this year's objectives?

1) to conduct fact-to-face surveys a federally-funded health care center throughout Delaware; and 2) to examine race disparities in quality and course of prenatal care.

10/9/09

(If more space is needed, please attach a separate sheet of paper)

19. Grant Period:	20. How many years has this project been funded:	21. If the project was funded last year, how much federal money was awarded?
From: 7/1/10 To: 6/30/12	N/A	N/A

22. Source of funding for this application:	Dollars
a. Federal grant	**424,700**
b. Other federal funds **(Specify source of funding)**	
c. Required state contribution **(Specify source of funding)**	
d. Discretionary state contribution **(Specify source of funding)**	
e. Required local contribution **(Specify source of funding)**	
f. Other non- federal funds **(Specify source of funding)**	
TOTAL	**424,700**

23. Budget by cost category and source:	Federal Funds	State Funds	Other Funds	Total Funds
Salaries & Fringe Benefits	173,110			173,110
Personal or Contractual Services	92,000			92,000
Travel	10,064			10,064
Supplies & Materials	9,826			9,826
Capital Expenditures				
Audit Fees	1,213			1,213
Indirect Costs	123,487			123,487
Other and Participants Costs	15,000			15,000
TOTAL	$424,700			424,700

24. How many positions are required for the project? **(Exclude casual/seasonal employees)**

Breakdown of position(s)	Authorized in State Budget	New Positions Required	Total
Paid for out of federal funds			
Paid for out of General Funds			
Paid for out of state special funds			
Paid for out of bond/local/other funds			
TOTAL			

Project Summary/Abstract

The current study is designed to enhance our knowledge of several key factors that may impact the utilization of prenatal care services. Using a survey as the primary data collection device, we propose to conduct a statewide assessment of prenatal care utilization to examine the impact of: 1) need for prenatal care utilization; 2) predisposing factors – i.e., factors known to impact health care utilization but not collectively included in other studies investigating prenatal care utilization; and 3) enabling factors – i.e., health insurance status, distance traveled to receive prenatal care, and indexes that measure the geographic availability of clinics that provide prenatal service.

The face-to-face survey will be conducted at federally-funded health care centers throughout Delaware. Study participants will be females who access prenatal care at these locations. The proposed participants for the study will be women who are at least 20 weeks gestation in their pregnancy and who receive prenatal care at these locales. It is anticipated that the data collected will provide information about the perception of care received by pregnant women based upon race and ethnicity. In addition, it is anticipated that the results will help the researcher(s) develop culturally competent care for the OB population.

PROJECT NARRATIVE

The proposed study is relevant to public health because it examines race disparities in quality and access to prenatal care on a statewide basis. The results of the proposed study will identify issues related to minorities' perceptions of prenatal care. Accordingly, a desired outcome is to improve access, quality, and satisfaction with prenatal care for minority females.

V

Facilities & other Resources

Founded in 1891 as the State College for Colored Students, Delaware State University (DSU) – the only historically and predominantly black college/university (HBCU) in Delaware -- is a land-grant college that has evolved into a fully accredited, public, comprehensive university. DSU enrolls a diverse population of approximately 3,700 students, just over 60% of whom are women. DSU embraces its tri-partite mission of teaching, research, and service, and offers more than 77 curriculum options leading to bachelor, master, and doctoral degrees. According to the NIH Office of Extramural Research, in 2008 DSU received $269,931 in institutional funding from NIH. University data for the past 4 years reveal:

- An average of 74.5% of the total student body (undergraduate and graduate) were members of health disparity populations;
- An average 78% of the graduates (all degrees) were from health disparity populations;
- An average of 40% of full-time faculty members were from health disparity populations; and
- An average of 80% of students (all degrees) received financial aid, including means-tested scholarships and other financial assistance.

While DSU has not been a major recipient of NIH support, the University has been building the research infrastructure to become an active research participant in the area of health disparities. DSU is committed to the long-term exploration of minority health and health disparities through the College of Health and Public Policy. In 2004 DSU hosted the first state-wide conference on minority health and health disparities; as an outgrowth of that conference, the Governor formed a taskforce on health disparities. Recently DSU's president completed a strategic plan for the university which established public health research and training as a priority objective for the university. A central feature of that strategic plan is to form the Center for Minority Health (CMHI) Improvement as a key organizational unit within the College of Health and Public Policy. The primary focus of CMHI is on medically underserved populations, with an emphasis on eliminating health disparities in Delaware and the nation. In 2007 the Governor's Health Disparities Taskforce recommended the creation of the Center for Minority Health Improvement at DSU to emphasize the role of education and literacy in addressing health disparities.

The College of Health and Public Policy has established a relationship with the NCMHD-funded Comprehensive Center of Excellence in Minority Health and Health Disparities at the Johns Hopkins Bloomberg School of Public Health to help facilitate our research infrastructure development. Dr. Thomas LaVeist, Director of the Hopkins Center for Health Disparities Solutions, has made a substantial commitment to health disparities research at Delaware State University. Since 2008 Dr. LaVeist has spent 1-2 days per month at the DSU campus and has participated in development of our strategic plan for developing

public health training, research, and community engagement. As a mentor for Dr. Agnes Richardson (PI), Dr. LaVeist has been instrumental in the development of this application; he will serve as a consultant throughout its implementation, assuring proper management and scientific integrity, and helping to build Dr. Richardson's research career while exposing undergraduate and graduate students to a research-intense environment (See letter of support from Dr. LaVeist).

This project will be housed in the John R. Price Building. The building is centrally located on the Delaware State University campus. The Price Building will facilitate involvement of faculty and students throughout the College of Health & Public Policy as well as other colleges of the university. The Price Building has a dedicated, computerized research lab with data analysis software and other relevant research and statistical packages; it also has wireless capabilities with five available "smart" classrooms, allowing for distance-learning opportunities.

SPECIFIC AIMS

This application is in response to the program announcement, "Recovery Act Limited Competition: Academic Research Enhancement Award (R15), RFA-OD-09-007. While myriad research has focused on factors that influence adult health care access and utilization -- including social status factors (sociodemographic characteristics, race, health insurance status, income levels, etc) and attitudinal barriers (perceived discrimination, health beliefs, past experiences with health care service systems, etc) in general -- fewer studies have explored factors that influence prenatal care utilization (Marco, Thorburn, & Zhao, 2008). Because early initiation and continued utilization of prenatal care are major ways of improving pregnancy outcomes, it is important that we increase our understanding of the barriers that inhibit prenatal care utilization. This is particularly true for non-Hispanic Blacks who – compared with other ethnic groups – have the highest rates of the pregnancy complications.

Research has observed that non-Hispanic Blacks are less likely to use prenatal services when compared to whites, which contributes to racial disparities in prenatal outcomes (Mikhail & Curry, 1999; Sparks, 2009). Researchers continue to seek a full understanding of factors contributing to black/white differences in prenatal care utilization. A widely used paradigm for explaining health care access and utilization is the Behavioral Health Services Model proposed by Andersen (e.g., Andersen, 1968, Aday & Andersen, 1984; Andersen, 1995), which postulates that three major factors influence health care utilization: need, predisposing and enabling factors. Using this model to examine black/white differences in prenatal care utilization, LaVeist, Keith, and Gutierrez (1995) determined that enabling factors accounted for racial differences in the timing of the start of prenatal care, but the model could not account for the number of service contacts initiated by the women or the adequacy of the services they received. A major limitation of this study is that several key factors, including perceived discrimination, mistrust, and health belief -- known to impact health care service utilization -- were not examined due to measurement limitations. While LaVeist et al (1995) findings were published nearly 15 years ago, we still do not have an understanding of how some major factors influence black/white differences in utilization of prenatal care, potentially limiting the development of intervention strategies that could have a major positive impact on birth outcomes.

This application has two specific aims:

Aim 1) To conduct a statewide assessment of pregnant women's utilization of prenatal care;

and

Aim 2) To examine race disparities in quality and course of prenatal care.

Results will be used to inform subsequent research objectives in the form of an R01 grant application that will investigate intervention strategies.

A. SPECIFIC AIMS

This application is in response to the program announcement, "Recovery Act Limited Competition: Academic Research Enhancement Award (R15), RFA-OD-09-007. While myriad research has focused on factors that influence adult health care access and utilization -- including social status factors (sociodemographic characteristics, race, health insurance status, income levels, etc) and attitudinal barriers (perceived discrimination, health beliefs, past experiences with health care service systems, etc) in general -- fewer studies have explored factors that influence prenatal care utilization (Marco, Thorburn, & Zhao, 2008). Because early initiation and continued utilization of prenatal care are major ways of improving pregnancy outcomes, it is important that we increase our understanding of the barriers that inhibit prenatal care utilization. This is particularly true for non-Hispanic Blacks who – compared with other ethnic groups – have the highest rates of the pregnancy complications.

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B. Background and Significance

A plethora of literature documents racial/ethnic disparities in pregnancy outcomes (Kawachi, Daniels, & Robinson, 2005; Lillie-Blanton, Rushing, & Ruiz, 2003). Non-Hispanic Black, American Indian, and Puerto Rican women consistently have higher infant mortality rates, compared with white, Asian and Mexican-American women (MacDorman & Mathews, 2008). Inadequate health care services (Schneider, Zaslavsky, & Espstein, 2002), lack of health insurance coverage (Mead et al., 2008), lack of access to appropriate health care services (Hadley & Cunningham, 2004; Lillie-Blanton & Hoffman, 2005; Agency for Healthcare Research and Quality, 2008), sociocultural variables (Peterson, Sterling, & Weekes, 1997), and inadequate prenatal care (Mikhail & Curry, 1999; Sparks, 2009) have all been identified as factors contributing to disparities in infant mortality.

Initiating early and continuous prenatal care is important for both the mother and the developing baby, and is considered one of the best ways to promote a healthy pregnancy. The timing and quality of prenatal care has a critical impact on the infant's health and survival. Late or no entry into prenatal care is associated with adverse pregnancy outcomes such as increased risk of low birth weight, premature birth, and neonatal death (Gortmaker, 1979; Greenbery, 1983; Showstack, Budetti and Minkler, 1984; Delaware Healthy Mother and Infant Consortium, 2006). To avoid these complications, both the American Academy of Pediatrics (AAP) and American College of Obstetricians and Gynecologists (ACOG) recommend prenatal care begin in the first trimester of pregnancy (AAP & ACOG, 2007). Methods for categorizing the adequacy of prenatal care are also based on when pregnancy care started, including the Adequacy of Prenatal Care Utilization (APNCU) index (Kotelchuck, 1994) and revised GINDEX (Alexander & Kotelchuck, 1996).

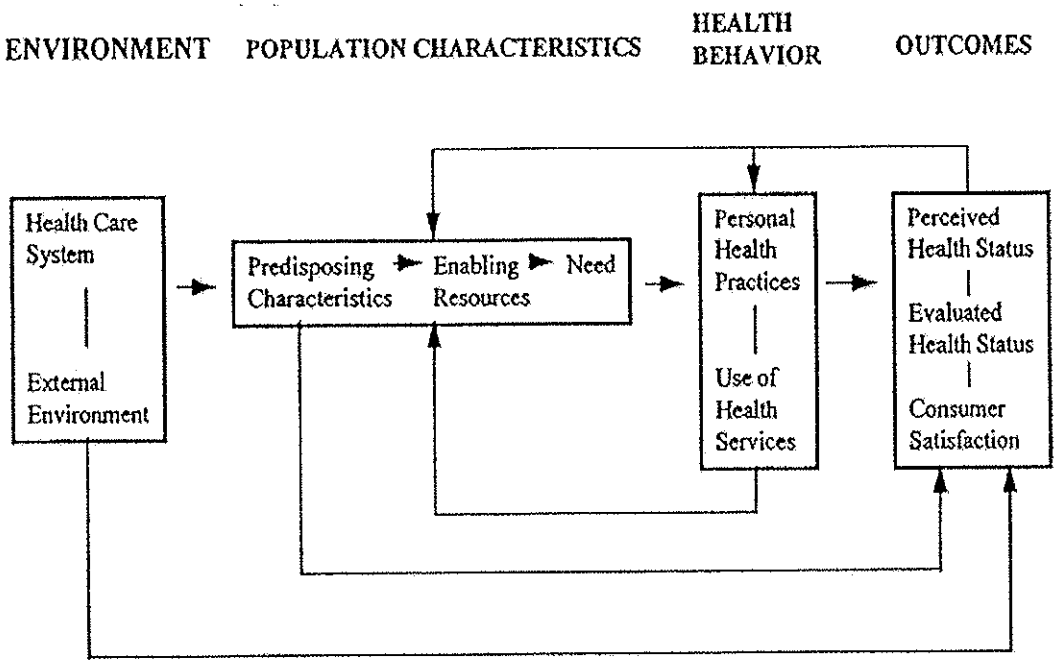
Health insurance status, sociodemographic characteristics, and financial status are all factors that impact the utilization of health care, but do not fully account for racial differences in health care utilization (LaVeist, Keith, & Gutierrez, 1995). Attitudinal factors including perceived discrimination (Bird & Bogart, 2001; Blanchard, 2005; Casagrande, Gary, LaVeist, Gaskin, & Cooper, 2007;Thorburn & Bogart, 2005), distrust of healthcare professionals (LaVeist, Nickerson, & Bowie, 2000; Thom, Bloch, Segal, et al., 1999; LaVeist, Isaac, & Williams, In press; Crawley, Ahn, & Winkleby, 2008), past health care experience (Rodiquez, Von Glahn, Grembowski, Rogers & Gelb Safran, 2008), and health beliefs (Margolis et al., 2003; Gilbert, et al., 2000) have received a considerable amount of attention as factors impacting the use of health care, including prenatal care (LaVeist, Keith, & Gutierrez, 1995; Marco, Thorburn, & Zhao, 2008).

Conceptual Framework

Developed in the late 1960s, the Behavioral Model of Health Services Use (Andersen, 1968) provides a conceptual framework for understanding why families use health services, for defining and measuring equitable access to

healthcare, and for developing policies to promote equitable access. According to Andersen, service utilization is sequentially influenced by three factors: a **need** which is recognized by the individual; **enabling factors,** including resources such as income, health insurance, transportation, etc; and **predisposing** factors, such as educational status, health beliefs, and some demographic characteristics.

Figure 1: Behavioral Model of Health Services Use



LaVeist et al (1995) used this model to explore racial differences in predisposing and enabling factors as they relate to prenatal care utilization. Findings indicated that enabling factors accounted for racial differences in initiation of prenatal services as measured by the month of first visit, suggesting there was no differences in the "desire" to obtain prenatal care; however, the model could not fully explain racial differences in total number of prenatal contacts or the adequacy of services as measured by the Kessner index (Kessner, Singer, Kalk, & Schlesinger, 1973). Furthermore, data limitations prevented LaVeist et al (1995) from exploring the effects of perceived discrimination and health beliefs, two crucial factors known to influence health service utilization. While perceived discrimination has been shown to impact health care utilization, we know of only one recent study that has investigated it within the context of prenatal care (Downing, et al. 2007). Furthermore, findings from LaVeist et al (1995) indicate that "supply side" factors (e.g., waiting room delays, length of time to get appointment, general reception by medical staff other than nurse or doctor) should be examined in further investigations to

determine how they may impact racial differences in utilization of prenatal care services.

The current study is designed to enhance our knowledge of several key factors that may impact the utilization of prenatal care services, using the Behavioral Health Services Model as the guiding framework. We propose to conduct a statewide assessment of prenatal care utilization to examine the impact of: 1) need for prenatal care utilization –pregnant status- the inclusion factor; 2) predisposing factors (racial and ethnic minority distrust of medical professionals, perceived discrimination, and health behavioral beliefs) – i.e., factors known to impact health care utilization but not collectively included in other studies investigating prenatal care utilization; and 3) enabling factors (health insurance status, distance traveled to receive prenatal care, and indexes that measure the geographic availability of clinics that provide prenatal service, using Geographic Information System (GIS).

The dependent variable is prenatal care utilization as measured by the number of prenatal contacts, month of first prenatal visit, and adequacy of prenatal care received. Additionally, we will examine "supply side" factors (waiting room delays, length of time to get appointment, general reception by medical staff other than nurse or doctor) suggested by LaVeist et al (1995) as potential factors contributing to prenatal care utilization.

C. PRELIMINARY STUDIES

A previous convenience sample of pregnant women (n = 47) at a Delaware federally-funded health clinic was administered a survey. The survey was designed to determine their perceptions of factors influencing their prenatal care utilization during each woman's prenatal care visit. Graduate nursing students from Delaware State University administered the surveys over a course of 4 to 12 visits at the center. Prior to administering the survey, students were trained on the survey tool and data collection methods, the consent form, participant sign-up, and confidentiality and security of collected data. All participants were treated in accordance with the "Ethical Principles and Code of Conduct" (American Psychological Association, 2002).

We measured potential sources of distrust in two ways. First, discrimination was tapped by yes or no responses to the item: Do you feel that doctors and nurses treat others unfairly because of their race? Second, anti-minority bias was measured using an aggregate of seven indicators assessing the following reasons doctors or nurses treat people unfairly based on their race or ethnic background (scored 1-3; Not a Reason-Major Reason): (1) minorities live in areas with few medical providers, (2) providers lack cultural awareness training, (3) providers do not believe minority patients have insurance or money to pay for medical care, (4) medical researchers do not pay enough attention to minority

health conditions, (5) providers do not believe minorities pay attention to their health, (6) minorities prefer different healthcare treatments than whites do, and (7) most medical practitioners are white and do not understand minority healthcare needs. Principal components analysis was conducted on the items, yielding only one component with an eigenvalue > 1.0 (3.19). All loadings exceeded .52 and accounted for 45.6% of the variance. The seven items were summed to create a scale with high internal consistency (Cronbach's alpha = .81). Item reliability analysis indicated that Cronbach's alpha would not be increased by removing any items from the aggregate scale. Scores were dichotomized (Mean split = 14.8, SD = 3.5) to create a categorical variable with scores below the mean indicating little anti-minority bias, and those above the mean indicating a strong anti-minority bias.

Maternal attitudes and social and demographic factors included age, ethnicity, educational level, marital status, primary language, annual household income, source of income, health insurance coverage, weeks pregnant at time of study, first pregnancy, and feelings about the pregnancy. Minority status was determined by recoding ethnicity into Whites vs. African Americans, Hispanics, and American Indians combined. Initiation of prenatal care was measured by a single, continuous item: the week prenatal care began, under the assumption that the earlier prenatal care begins the better.

A multivariate analysis of variance (MANOVA) model was used to test differences in how the initiation of prenatal care varied as a function of discrimination, bias, and racial and ethnic minority status. Analysis of variance (ANOVAs) or simple regression was conducted on each maternal attitude and social and demographic factor separately to identify potential confounding variables. Only significant maternal attitudes and social and demographic factors were entered in the MANOVA. The full model included main effects and all two-way interactions. The test of significance was based on Wilks' lambda, converted to an F value (Rao's R). This was followed by univariate analyses of variance (ANOVAs) on the significant effects. Mean comparisons for all significant main effects and interactions were conducted using Tukey Honestly Significant Difference (HSD) tests for unequal groups. The level of statistical significance was set at .05. All statistical analyses were performed using STATISTICA (StatSoft, Inc., Tulsa, OK).

Sample Description

The majority of study participants were African-American (62.2%). Whites comprised 15.5% of study participants. Mean age was 24.5 (SD= 4.6), with most between the ages of 16 and 25 (60.8%). The primary language was English (80.9%), though 10.6% of respondents indicated Spanish. Many participants (41.3%) had an annual income level below $15,577 (poverty level for a family of three in Delaware). Most were high school graduates only (38.3%), though 27.7% had completed some college courses. The majority (93.6%) began receiving prenatal care in their First Trimester at 7.3 weeks on average (SD = 3.1). Most (55.4%) were in their Third Trimester (28 weeks+) when completing the survey. 60% of respondents wanted pregnancy to occur later than when it

actually happened. 89.1 % of respondents had health insurance coverage. Many (44.7%) felt doctors and nurses treated patients unfairly based on race, while over half (55.6%) thought there was a strong anti-minority bias among doctors and nurses. Health insurance coverage and primary language significantly (both $p < .05$) affected the initiation of prenatal care; participants who lacked health care coverage began receiving prenatal care approximately three weeks later than participants who had health care coverage. Also, participants whose primary language was Spanish initiated care nearly two weeks later compared to participants whose primary language was English.

MANOVA Model

The overall MANOVA effect was significant, (Rao's R (13, 28) = 2.92; $p < .01$). ANOVAs revealed significant main effects for discrimination ($F(1, 28) = 20.27$, $p < .001$), anti-minority bias ($F(1, 28) = 6.21$), $p < .05$), and health coverage ($F(1, 28) = 13.19$, $p < .01$) but not for primary language or for minority status. Post hoc comparisons indicated significantly later initiation of prenatal care among participants who felt doctors and nurses treat patients unfairly based on race compared to participants who feel doctors and nurses treat patients unfairly based on race ($p<.001$). Also, participants who felt doctors and nurses had strong anti-minority bias initiated prenatal care significantly later than did those who thought doctors and nurses had little anti-minority bias ($p<.001$). Post hoc tests further indicated significantly later initiation of prenatal care for participants without health care coverage compared to participants with health care coverage ($p < .01$).

However, the main effect for discrimination was modified by anti-minority bias and by minority status. There was a significant interaction between discrimination and anti-minority bias ($p < .05$) and between discrimination and minority status ($p < .01$), such that prenatal care was significantly delayed for participants who thought doctors and nurses had a strong anti-minority bias compared to participants who thought doctors and nurses had little anti-minority bias, and was significantly delayed for minority participants compared to White participants, but only among pregnant women who felt doctors and nurses treated patients unfairly based on race.

In addition, the main effect of anti-minority bias was modified by minority status. There was a significant interaction between anti-minority bias and minority status ($p < .01$). Results further indicated that prenatal care began later for minority participants compared to White participants, but only among participants who thought doctors and nurses had a strong anti-minority bias.

Results indicated that both minority and non-minority patients distrust health care professionals who have strong anti-minority bias and discriminate on the basis of race. Prenatal care was initiated later for minority participants compared to White participants, but only among participants who thought doctors and nurses were biased against minorities or felt they discriminated on the basis of race. Findings suggest the need to overcome distrust in health professionals to improve access to timely prenatal care for women of all races and ethnicities.

PROTECTION OF HUMAN SUBJECTS

Risks to Human Subjects

The target population will be pregnant females, at least 18 years of age who are at least in their 20th week of gestation. The study requires the use of pregnant women as study participants because the study focuses on the perceptions of pregnant females about the prenatal care they receive from their health providers. All ethnic groups and races are welcome to participate in the study; results will be weighted to reflect the true population of Delaware.

Study participants will complete the survey instrument using pencil and paper. Therefore, none of the study participants will be at-risk by participating in this study. The surveys will have no identifying information to keep the participants' identities and other personal information private. The data collectors will obtain the survey information from the participants at the 10 federally funded medical centers targeted in this study. Completed surveys will be brought to the program office of the Principal Investigator, who will place them in a locked file. The data analysts will be the only other individuals who will have access to the completed surveys. At the completion of the study, the Principal Investigator will supervise the shredding of the completed surveys.

Adequacy of Protection against Risks

Data collectors will approach pregnant females at the identified 10 federally funded medical centers. As individuals express interest in participating in the study, data collectors will present them with a written Informed Consent for potential participants to review and sign, which is an attachment of this grant application. Individuals will not be permitted to participate in the study if they do not sign the Informed Consent.

Potential Benefits of the Proposed Research to Human Subjects and Others

It is anticipated that the data collected will provide information about the perception of care received by pregnant women based upon race and ethnicity. In addition, it is anticipated that the results will help the researcher(s) develop culturally competent care for the OB population. No direct benefit is promised to participants.

Importance of the Knowledge to be Gained

Research has focused on factors that influence adult health care access and utilization including social status factors (sociodemographic characteristics, race, health insurance status, income levels, etc) and attitudinal barriers (perceived discrimination, health beliefs, past experiences with health care service systems, etc) in general, fewer studies have explored factors that influence prenatal care utilization (Marco, Thorburn, & Zhao, 2008). Because early initiation and continued utilization of prenatal care are major ways of improving pregnancy outcomes, it is important that we increase our understanding of the barriers that inhibit prenatal care utilization. This is particularly true

for non-Hispanic blacks who – compared with other ethnic groups – have the highest rates of the pregnancy complications.

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